

## WHAT IS CLAIMED IS:

1. AN LSI testing apparatus for testing an electronic device comprising:

5 a power source unit for supplying a source voltage of direct current to said electronic device;

a detecting unit for detecting a source current with which said electronic device is supplied by said power source unit; and

10 a judging unit for judging quality of said electronic device,

wherein said power source unit comprises means for overlaying an overlaid signal with a predetermined period on said source voltage, and said judging unit judges said quality of said electronic device on the basis of said source current detected 15 by said detecting unit in case said electronic device is supplied with said source voltage on which said overlaid signal is overlaid.

2. AN LSI testing apparatus as claimed in claim 1, wherein 20 said power source unit comprises means for changing a signal level of said overlaid signal, and said judging unit judges said quality of said electronic device for each signal level of said overlaid signal.

3. AN LSI testing apparatus as claimed in claim 1, wherein 25 said power source unit comprises means for changing a frequency of said overlaid signal.

4. AN LSI testing apparatus as claimed in claim 1, wherein 30 said judging unit judges said quality of said electronic device on the basis of a difference between a source current, which should be supplied to said electronic device, in case said electronic device is supplied with said source voltage and a source current

detected by said detecting unit in case said electronic device is supplied with said source voltage on which said overlaid signal is overlaid and a period of said overlaid signal.

5 5. AN LSI testing apparatus as claimed in claim 1, wherein  
said judging unit judges said quality of said electronic device  
on the basis of a difference between a spectrum of a source current,  
which should be supplied to said electronic device, in case said  
electronic device is supplied with said source voltage on which  
10 said overlaid signal is overlaid and a spectrum of a source current  
detected by said detecting unit in case said electronic device  
is supplied with said source voltage on which said overlaid signal  
is overlaid.

15 6. AN LSI testing apparatus as claimed in claim 1, wherein  
said judging unit judges said quality of said electronic device  
on the basis of a magnitude of a predetermined frequency component  
of said source current detected by said detecting unit in case  
said electronic device is supplied with said source voltage on  
20 which said overlaid signal is overlaid.

7. AN LSI testing apparatus as claimed in claim 1 further  
comprising a pattern generating unit for providing a test pattern  
to said electronic device, wherein said judging unit judges said  
25 quality of said electronic device on the basis of said source current  
detected by said detecting unit under a condition, where said test  
pattern is provided to said electronic device.

30 8. AN LSI testing apparatus as claimed in claim 7, wherein  
said electronic device comprises a plurality of semiconductor  
devices, and said pattern generating unit provides said electronic

device with said test pattern by which all of said plurality of semiconductor devices operate at least once.

9. AN LSI testing apparatus as claimed in claim 1 further  
5 comprising an electromagnetic wave generating unit for generating an electromagnetic wave with a predetermined frequency,

wherein said judging unit judges said quality of said electronic device on the basis of said source current detected by said detecting unit under a condition, where said 10 electromagnetic wave generated by said electromagnetic wave generating unit is provided to said electronic device.

10. AN LSI testing apparatus as claimed in claim 9, wherein  
said frequency of said electromagnetic wave generated by said 15 electromagnetic wave generating unit is approximately the same as a frequency of said overlaid signal.

11. AN LSI testing apparatus as claimed in claim 9, wherein  
said electromagnetic wave generating unit comprises means for 20 changing an intensity of said electromagnetic wave, which is generated.

12. AN LSI testing apparatus as claimed in claim 9, wherein  
said electromagnetic wave generating unit comprises means for 25 changing a frequency of said electromagnetic wave, which is generated.

13. AN LSI testing apparatus as claimed in claim 9, wherein  
said electromagnetic wave generating unit comprises a first 30 generator for generating an electromagnetic wave with a first frequency and a second generator for generating an electromagnetic

wave with a second frequency,

wherein a position in which said first generator is provided is different from a position in which said second generator is provided.

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14. AN LSI testing apparatus as claimed in claim 13, wherein said electromagnetic wave generating unit comprises a magnetic field adjusting unit for adjusting at least one of a position and a direction of said first generator and said second generator.

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15. AN LSI testing apparatus as claimed in claim 9, wherein said judging unit judges said quality of said electronic device further on the basis of said frequency of said electromagnetic wave generated by said electromagnetic wave generating unit.

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16. AN LSI testing apparatus as claimed in claim 1, further comprising an alternating electric field generating unit for generating an alternating electric field with a predetermined frequency,

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wherein said judging unit judges said quality of said electronic device on the basis of said source current detected by said detecting unit under a condition, where said alternating electric field generated by said alternating electric field generating unit is provided to said electronic device.

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17. AN LSI testing apparatus as claimed in claim 16, wherein said frequency of said alternating electric field generated by said alternating electric field generating unit is approximately the same as a frequency of said overlaid signal.

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18. AN LSI testing apparatus as claimed in claim 16, wherein

said alternating electric field generating unit comprises means for changing an intensity of said alternating electric field.

19. AN LSI testing apparatus as claimed in claim 16, wherein  
5 said alternating electric field generating unit comprises means for changing a frequency of said alternating electric field.

20. AN LSI testing apparatus as claimed in claim 16, wherein  
said judging unit judges said quality of said electronic device  
10 further on the basis of said frequency of said alternating electric field generated by said alternating electric field generating unit.

21. AN LSI testing apparatus as claimed in claim 15, wherein  
said electronic device comprises a plurality of semiconductor  
15 devices to which said power source unit supplies said source current  
on which said overlaid signal is overlaid, and

    said alternating electric field generating unit comprises  
    an electric field probe for providing said alternating electric  
    field to an input to at least one of said plurality of semiconductor  
20 devices.